August, 1954

THE CHEMIST

VOLUME XXXI NUMBER 8

PROF. PAUL F. BAILEY

Receives first Honor Scroll of Louisiana AIC Chapter

(See page 315)

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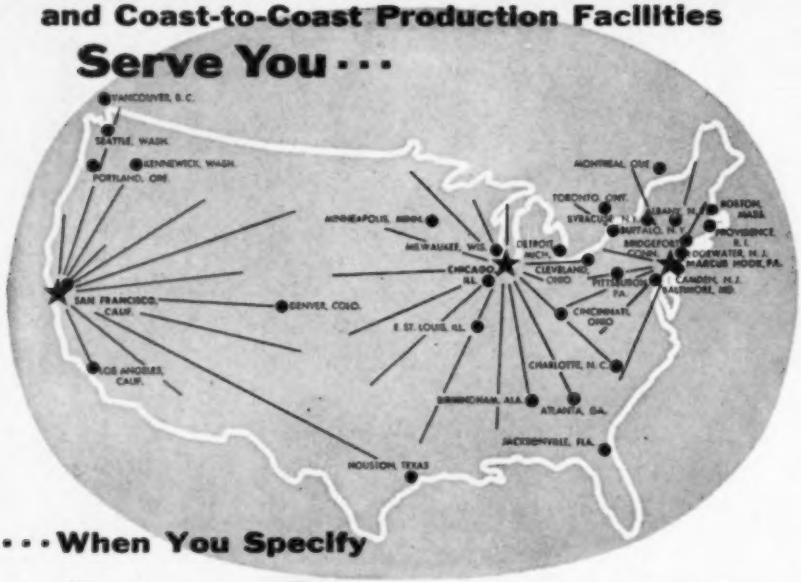

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The CHEMIST

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Publication of

THE AMERICAN INSTITUTE OF CHEMISTS, INC.

60 East 42nd Street, New York 17, N. Y.

Entered as second class matter April 8, 1936, at the Post Office at New York, N. Y., under Act of August 24, 1912. Issued monthly.
Subscription price, $2.00 a year to Members, $3.00 to Non-Members. Single copy, this issue, $0.25. Copyright, 1954 by THE AMERICAN INSTITUTE OF CHEMISTS, INC.

Volume XXXI August, 1954 Number 8

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TO COME

In the September CHEMIST, Dr. Lewis Webster Jones, president of Rutgers University, will discuss "Some Phases of Education." His thoughts on "the passion for security" are illuminating. Dr. Hans T. Clarke, F.A.I.C., will be featured. He received the recent Honor Scroll of the New York Chapter. Other interesting papers are also scheduled.

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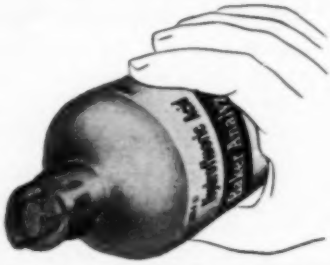

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EDITORIAL

Another Problem

Dr. Donald B. Keyes

President, The American Institute of Chemists, Inc.

HOW OFTEN have you and I been told by the "Great Men" in Washington that "Equality of Sacrifice" is a fundamental principle of this nation and this means that *every* able bodied young man should be at some time during his youth an active member of our Armed Forces!

Now, you and I have learned through the press that *we* are asking Washington to defer or excuse from Military Service *all* scientists and engineers and especially *all* chemists. Unfortunately millions of good people, fathers and mothers whose sons are not scientists or engineers really think we, you and I, represent just another selfish and articulate minority. They actually believe we want our sons, who are chemists for example, protected in time of war far removed from the firing line while their sons, equally brilliant, bleed and die to save the nation.

Many years ago a military instructor told his class that the Army did not train men to bleed and die but to live and fight. Dead men are not in a position to defend a nation.

You and I know that the "Boys in the Kremlin" with their desire to conquer the world are not interested in "Equality of Sacrifice." They place their men, young and old, where they believe they are best fitted. Public opinion is something they "create" not something they determine.

Are not we just as bright? Of course we are. We have brains and we can use them. As a brilliant friend of mine once said to me, "Don, there is nothing in the Constitution that requires one to be dumb."

Now here's the problem — what can we do as members of the AIC to educate our good citizens unfamiliar with science and engineering to a realization of the fact that World War III will be won only if those organizations essential to our survival have capable men, young and old, in key positions?

The American Chemical Society Board has expressed its thoughts very clearly. Your AIC Council will probably do likewise. Will these expressions of opinion be read and understood by the non-technical world? I doubt it.

There seems to be only one possible solution — each and every member of the AIC can educate one or more of his non-technical friends.

How about your friend, the minister, priest, or rabbi, doesn't he want

his nation to survive? How about your friends in the local service clubs, your school board, your high school principal, your banker, your insurance agent, the store managers where you trade — they all want to survive and they will listen to you.

The wire services, and the metropolitan dailies will never quote you on this problem. Neither will the *Saturday Evening Post* send a staff member to interview you, even though they should because you know the solution.

However, you can educate your friends in your own community, and believe me, that will help.

Please write and tell us not what you may do, but what you *are doing*. We will see to it that all members of the AIC hear about your successes.

(Dr. Norman A. Shepard, chairman of the AIC Committee on Manpower, will report further on this subject in the next issue of *The Chemist*.)

Glycerine Awards: Granted annually by the Glycerine Producers' Association are now open for nominations. The awards are made to recognize and encourage research leading to new and improved applications of glycerine or its derivatives to products or processes. Official entry blanks may be secured from the Awards Committee, Glycerine Producers' Association, 295 Madison Ave., New York 17, N. Y., and nominations must be received by November first.

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New Position: For Merton B. Smith, F.A.I.C., now production supervisor with American Cyanamid Company at Gloucester, N. J. He was formerly with the Davis Nitrate Company at Metuchen, N. J.

Honored: The late Dr. Vladimir N. Ipatieff, F.A.I.C., who was associated with Northwestern University and Universal Oil Products Company, by the formation of an Ipatieff Gift Fund, by an anonymous donor, for the John Crerar Library of Chicago. The fund of $5000 will be used to purchase books of chemical interest.

Industry's Stake in Education's Product

Paul F. Bailey, F.A.I.C.

Professor of Chemistry, Loyola University, New Orleans, La.

(Presented when the author received the first Honor Scroll of the Louisiana Chapter on May 12, 1954, in New Orleans, La.)

WE HAVE often heard discussed what industry expects of the college or university where chemists are trained.

The graduate in chemistry should have a well-rounded education with emphasis on chemistry, mathematics and physics. This is a very costly undertaking whether it be in a public or private institution.

We know that industry establishes many research grants in institutions of higher learning. However, the funds so allocated are usually for the purchase of equipment and fellowships for the project. The equipment is very often so specialized that it finds little use in undergraduate training and the research worker is a graduate or post-doctoral student. The instructor who directs the research often receives no pay and the school may only receive publicity for the use of its facilities and staff.

It seems to me that since the colleges and universities are sources of supply for industry, industry should aid in insuring a constant supply.

Many scholarships are awarded by private institutions to outstanding high school graduates. The money for many of these comes directly from the general fund of the school and not from a special fund founded by a benefactor.

When a student pays full tuition and fees he is covering only about 60 per cent of the cost of his education, and if on a full scholarship the institution may bear the entire cost. This means a decrease in funds available for equipment, improvement of facilities, and pay for instructors.

Industry can well afford to establish special grants for the education of those who are depending upon the generosity of a private institution.

We know that a research worker should have certain qualifications. Some of these can be acquired, others can not. It follows, therefore, that all teachers do not have the necessary requirements for productive research. Many instructors who, no doubt, would be excellent research workers are so burdened with teaching and administrative duties that little if any time remains for research. These men are absolutely essential to education today. Industry sometimes fails to recognize this and should provide funds to aid these individuals in obtaining better wages, better teaching equipment, and so on.

We recall the work of Perkin in England and Hofmann in Germany.

Perkin synthesized the first of the aniline dyes in the laboratory of a British university. His government honored him with a title and British industry failed to support his work. Hofmann took Perkin's discovery to Germany. There he received the all-out financial support of his government and the great chemical industry of the Germany of the Kaisers was born.

One company has taken a forward step which other industries might do well to follow. Its policy is to contribute to educational institutions a substantial sum for each of their graduates who have remained in the company's employ for a specified time.

In conclusion, industry should to some extent subsidize education.

Dedication Address

Harold A. Levey, Sr., F.A.I.C.

Councilor, Louisiana Chapter, The American Institute of Chemists,
311 *Audubon Blvd., New Orleans* 15, *La.*

(Presented when the first Honor Scroll of the AIC Louisiana Chapter was given to Prof. Paul F. Bailey.)

THIS unique event is the first of its kind in the South for the AIC. Almost each day we are reminded of the new contributions made by the sciences to our national defense, to the maintenance of our American way of life and Western freedom, and to our ever higher standard of living. These significant strides emanate from the men and women who are members and exponents of these sciences. All of these, and more particularly the fundamental sciences, are represented by groups made up of professional men who are banded together with the objective of the betterment of their status as members of their particular profession. Our group has designated itself as THE AMERICAN INSTITUTE OF CHEMISTS.

While our specific efforts are directed in this channel, nevertheless we fully recognize the basic importance of all related activities and it is our intent that our membership exercise substantial activities in these many related directions. Our INSTITUTE, with a background of more than thirty years of constructive effort, has dedicated itself toward the betterment and advancement of the professional status of the chemist.

A relatively new activity of ours is the step we are taking tonight, namely, to give recognition to one of our members for his notable contributions. The recipient of the 1954 Scroll Award is Professor Paul F. Bailey, F.A.I.C., of the Chemistry Department of Loyola University of the

H. A. Levey, Prof. Bailey and Dr. A. R. Choppin.

South. He is an outstanding member of the altruistic profession of the educator and occupies a position of significance in the teaching of chemistry in the South. His teaching experience is lengthy, notable, efficient, and significantly inspirational, as evidenced by the extended list of his pupils who have achieved distinguished positions in both chemical research and chemical industry.

His right as a recipient of this award stems from his status as an important member of the altruistic profession of teaching, and thereby the advancement of the status of the chemist.

Professor Bailey's achievements are numerous and diversified. In addition to his graduate degree, his activities are marked by the honors bestowed upon him by many scientific and fraternal societies, and by the high administrative offices assigned to him by his many admirers and ardent followers.

Accordingly, on this auspicious occasion and in recognition of your distinguished achievement in chemical science and more particularly your unselfish contributions toward the betterment of the chemist, I dedicate to you, Prof. Bailey, the 1954 Scroll Award of the Louisiana Chapter of

THE AMERICAN INSTITUTE OF CHEMISTS, and I personally am deeply gratified for the opportunity of conferring this award on so worthy a recipient.

The citation to Prof. Bailey reads:

For a generation of service to the chemist through chemical education.

Presentation to Professor Bailey

THE FIRST Honor Scroll of the Louisiana Chapter of THE AMERICAN INSTITUTE OF CHEMISTS was presented to Prof. Paul F. Bailey of Loyola University, New Orleans, La., at a joint meeting of the Chapter and the Loyola University Chapter of Student Affiliates of the American Chemical Society, held May 12, 1954, at Maylie's Restaurant, in New Orleans.

Dr. A. R. Choppin, dean of Louisiana State University College of Chemistry and Physics, and Dr. Winston R. de Monsabert, associate professor of chemistry at Loyola and chairman of the local section of the American Chemical Society, assisted with the program.

Student awards and associate memberships in the INSTITUTE were presented to the following outstanding students: Courtney Picou of Tulane University, Miss Mary Sue Hanlon of Louisiana State University, and Joseph Guenther of Loyola University.

The presentation of the scroll to Prof. Bailey was made by Harold A. Levey, national AIC councilor from the Lousiana Chapter. Prof. Bailey responded with a discussion of "Industry's Stake in Education's Product." (See preceding pages.)

Appointed: Dr. H. O. Kauffmann, F.A.I.C., technical director of Buffalo Electro-Chemical Co., Inc., Division of Food Machinery and Chemical Corp., Buffalo, N. Y., to the Board of Directors of the company.

Honored: Kenneth G. Mackenzie, F.A.I.C., who was elected to honorary membership in The American Society for Testing Materials. He has served the society for more than forty-two years. He retired from The Texas Company, March first, after forty-three years of service and is now a consultant with offices in Westport, Conn., and Chicago, Illinois.

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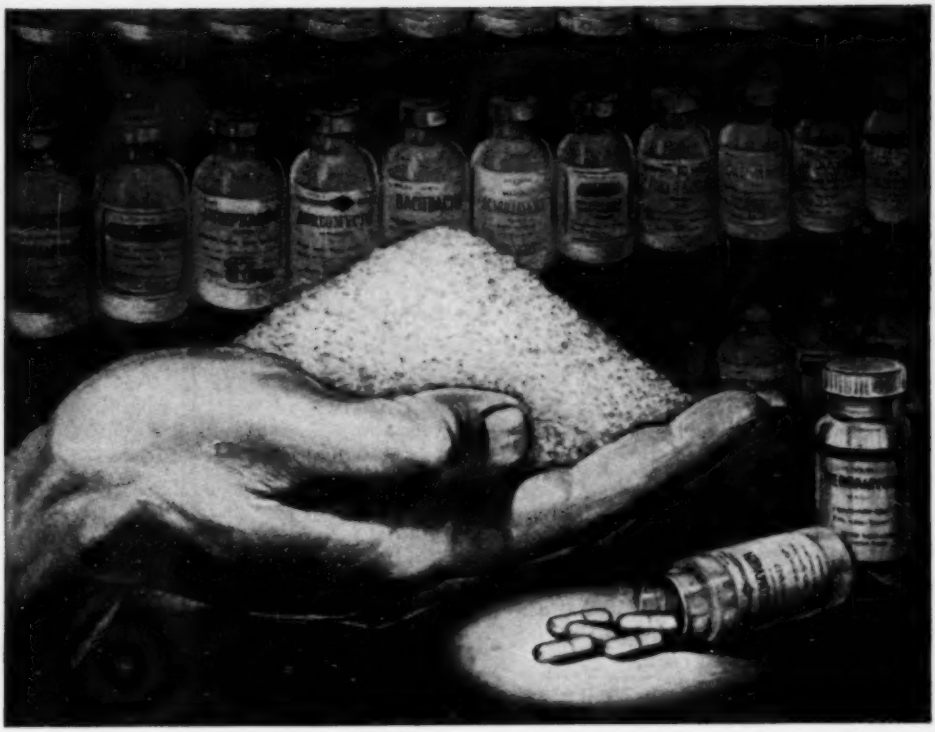

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President, Sugar Research Foundation, 52 Wall Street, New York 5, N. Y.

(Presented on the Panel Discussion, "Education for the Chemical Profession," held at the AIC Annual Meeting, May 14, 1954.)

IT HAS often been said that the simple problems have been solved. While not strictly true in an absolute sense, this is about as close to the truth as a broad generalization is apt to be. Let us explore the effects of this truth upon chemical education.

One of the conditions which this forces upon us is an acceptance of more years of study in order to prepare ourselves for a position of maximum usefulness in chemisty. The day when an eighteen-year-old Perkin could attempt a preposterous synthesis of quinine and initiate the great synthetic dye industry seems to be past. At least I know of no repetitions of this event in the twentieth century.

In the present world of chemistry, keen economic competition forces us to work largely as teams of specialists, each of which has a thorough knowledge of a limited area. When I read letters to the editor deploring the present relative absence of men of broad training and background, my sympathies are with the writers. But cold logic points out that the present complex problems which need to be solved for scientific or industrial progress can be attacked successfully only by teams of specialists perhaps directed broadly by one or a very few generalists. We need both, but far more specialists.

As a result of the operation of the law of supply and demand, this increased need for specialists has produced irresistible pressure for more attendance in graduate schools. During the present century, with only temporary exceptions, the graduate enrollments have grown steadily both in an absolute sense and relative to undergraduate enrollments. The present dearth of graduate students resulting from low depression birth rates and military service is only a dip in the broad upward curve.

A remarkable factor in this increase has been the growth in financial help for graduate students. Probably the vast majority of graduate students majoring in chemistry have some sort of scholarship, fellowship, or assistantship which is enough, or nearly enough, to keep them going. Industry, government research, and private philanthropy have all contributed generously.

From a sociological standpoint this had had the effect of enticing into chemistry a large number of men from relatively low-income families, who, for example, could not have met the expense of a medical educa-

tion. This broadening of the base from which chemists could come has undoubtedly contributed to the remarkably high intellectual standing of chemical graduate students as a group. We have a brighter and larger group of chemists than would otherwise have been possible.

It is impossible to view graduate training in chemistry in the United States without acquiring a general feeling of satisfaction. The unprecedented numbers of highly educated men and women with advanced degrees in chemistry have been employed by industry, government and universities which have insistently called for more. Our chemical industry has grown at a rate which has surprised and confounded all the prophets. The theory that you couldn't become a real chemist unless you drank water from the Rhine is remembered now only as a source of amusement. From a man regarded as a somewhat queer, egocentric character, the chemist and chemical engineer have emerged in many cases to assume the presidencies of leading chemical companies, and in general these companies have been markedly successful.

The idea that Europe discovers basic knowledge which Americans only apply, has also been rendered somewhat obsolete in recent years. It was never more than a relative truth as is evidenced by such researches as Gibbs' discovery of the phase rule, Franklin's discovery of the identity of lightning and electricity, and Theobald Smith's proof of the role of insects in transmitting disease. One need only point to the high proportion of American chemists among recent Nobel prize winners, to the large number of the vitamins which have been discovered here, to such work as Herbert Brown's on steric strain or Hammett's on acidity function to realize that fundamental chemistry is in a very healthy state in the U. S.

Some years ago in one of the Priestley Lectures at Penn State I pointed out that scientists almost always act like pragmatists even when they say that they are not. We believe in what works. How then can anyone criticize adversely chemical education in the United States? One criticism is that we do not have enough young people going into chemistry. This is an effect compounded from many causes. The most important one is the low birth rate of the depression years. Realistic persons who have taken a look at the wave of youngsters now in grade school and tried to imagine how we will give a college education to those desiring it when they are of suitable age are worried. We must either double our college enrollments or make a selection of the more competent ones intellectually or raise tuition fees to eliminate the more impecunious.

If we are ever driven by force of circumstances, i.e., limitations of working space and available teachers, to send home the less gifted and/

or lazier students, the percentage of chemistry majors will automatically rise. It is easy for us who no longer teach to forget that chemistry, physics and mathematics are hard for most students to master. They can't be passed merely by having an agile mind and a fluent vocabulary. You have to dig in and learn them. When men are scarce and jobs are plentiful in all fields, why bother? Barring some great catastrophe such as an atomic war, the dearth of chemistry majors seems likely to right itself in the fairly near future.

The Most Dramatic of Sciences

Meanwhile, there are some things which we can do to make chemistry more attractive to beginning students. Why should we withhold from them the drama inherent in this most dramatic of sciences? Chemistry has done much to remake our way of life, to create beauty in dyes, fabrics and color photography; to heal and prevent disease; to increase our standards of prosperity; to maintain and increase the fertility of our soil and to help create abundance of food also by controlling insects and other pests. While we are subjecting a student to what is for him the drudgery of the gas laws it wouldn't hurt to let him know that this sort of thing led directly to Diesel engines and the science of aerodynamics.

Another perennial source of criticism of education is the variable emphasis on facts and theory. This always reminds me of the pointless argument over whether heredity or environment is most responsible for what a person becomes. If environment is not right, you might be dead, and with the wrong heredity you might have been an earthworm! As well argue over whether the area of a rectangle depends more on the length or the breadth. Theories about facts are abstract, meaningless and soon forgotten; facts without theory are jumbled, incoherent, meaningless and also soon forgotten. A balanced knowledge of facts and theories is necessary but the proper balance varies with the state of development of the science and with the type of problem being attacked. One of the reasons why democracies do so well scientifically is that the absence of any single point of view imposed on the whole permits a great diversity of viewpoints and practices. This, in turn, results in men of many different kinds of training who then view a scientific problem from diverse standpoints and thus ultimately solve it.

Too Little Faith

Finally, there is a problem in the education of scientists which has hardly been recognized, let alone solved. It is the great occupational disease of scientists not to have sufficient faith in the capacity of science to solve difficult problems. We have all chuckled smugly at the patent commissioner who before the Civil War said that we could look forward to a time in the relatively near future when invention would be virtually completed.

We chuckle but we do not really get the point. A Nobel prize winner in physics told me nearly ten years ago that there would be no essential improvements in automobiles in the future. He was not joking! He also said that the current attempts to release atomic energy would fail. His view reflected that of a prominent dean of engineering who said in 1943 that it was a great pity that scientific effort should be diverted in the direction of atomic energy to the neglect of practical means of obtaining energy.

Now we have the amazing spectacle of a former president of the United States who never graduated from college and who ignored the recommendation of a group of distinguished scientists, ordering a crash program on a fusion bomb and thus enabled us to obtain the more powerful weapon just a jump ahead of Russia. Anyone who knows men such as Conant can not doubt their sincerity, patriotism, anti-communism, or mental competence. I repeat, they were suffering from the commonest occupational disease of scientists, an inability to realize the power of the scientific method.

How many of you remember the pessimism of the chemotherapists just before the sulfa drugs appeared? The protoplasm of bacteria and other micro-organisms is essentially the same as that of the host; it was unreasonable to suppose that a drug could be found which would attack one and not the other. Of course, we already had salvarsan and quinine but they were probably some kind of freak exceptions. Do you remember how Newcomb proved mathematically that an airplane could not fly? Of course there were the birds, but they had not studied the calculus.

Somewhere in our crowded university curricula we need to point out to students while their minds are young and plastic that a *sine qua non* for accomplishment in any field is a belief that *it can be done*. Nowhere in all human activity is there so much justification for this faith as in science. No other field has created such rapid progress, found its way around, over, under, and through obstacles with such uniform success. In no other way has man learned to predict with such accuracy, to reach objectives, not on a schedule, but with certainty, and in the words of Omar "to take this universe entire and shape it nearer to the heart's desire."

As scientists we have to be tough-minded. Each of us needs to be a cynic in the sense of Bierce, "A blackguard whose faulty vision sees things as they are, not as they ought to be." But how can anyone view realistically the history of science and its impingement on civilization and not come to the conclusion that we are only well started and that the future is limited only by the imagination of man? The greatest gap in our chemical education is that students graduate not knowing or ap-

preciating what science can do.

What can be done about this problem? I have thought of two things which might help. There must be more.

Perhaps one cause of pessimism is that when research is tackled it proves to be tougher, slower, and more fraught with pitfalls than the student expected. It is so easy in reporting research to gloss over lightly the negative results. No one is particularly interested in most negative results, including the men who did the experiments. In consequence, the student hears about the things that worked and little about those which did not, unless perchance they led to an important new concept such as Heisenberg's uncertainty principle, which is really just a summation of a large number of unsuccessful experiments.

Somewhere in a chemical education, not in any special course but incidentally in discussing scientific progress, this unconscious distortion should be corrected. We should mention why Salvarsan is called 606 and that over twenty-thousand compounds were made and tested to get three really good anti-malarials. Instead of sneering at empirical research as somehow beneath our diginity, we should try to impart a balanced view which would give proper emphasis to the tremendous contributions of this powerful approach.

Finally, we should try to impart to the student some concept of the curious habit which scientific progress has of breaking out of the artificial shells with which men of little minds seek to circumscribe the domain of science.

We live in an age when people are inevitably concerned with the prospect of annihilation because a lot of bright physicists, chemists, and chemical enginers created the atomic age. There is abroad in the land a wave of anti-science, anti-intellectualism, and obscurantism which results from revulsion against the bomb. It is largely the fear of Russia which has kept this viewpoint from checking scientific progress.

Meanwhile food faddism has grown to the point where it is a real threat to our national health. The resistance to the fluoridation of water in this generation contrasts curiously with the rapid acceptance of chlorination in a previous one.

What We Need

What our generation needs is more science applied unceasingly to more problems in fields not heretofore regarded as scientific. We need a calm, reasoned faith in what science can accomplish, a faith based on the record. Let me give one illustration. Only a few years ago one of the respected thinkers of our time, Mortimer Adler, stated that the scientific method could never be of the slightest value in the study of history. It happened, ironically, that another member of the same faculty at the University of Chicago proved that he was

wrong. Dr. W. F. Libby discovered how to date carbonaceous objects by measuring their radioactivity. This has given us an objective method of distinguishing in many cases between genuine and spurious douments. It has put accurate dates on objects whose age was known only approximately. History, instead of being as Napoleon said, "A pack of lies, agreed upon," is measurably more realistic.

Will a course in the history of chemistry or the history of science give the student this picture of a growing, developing area of exact knowledge set in a theoretical framework, continually increasing in size and in importance in human affairs, pouring over and washing away the puny dams which men of timorous minds erect in vain attempts to circumscribe its growth?

Perhaps! Or perhaps the best way to impart such a concept is by informal discussion. In some manner or other we need to give young scientists the broad picture and the confidence in science which this inevitably imparts.

Officers: Of The Chemical Institute of Canada for 1954-55 are: President, E. R. Rowzee; vice president, Dr. R. Gaudry; Chairman, Board of Directors, A. Monsaroff; Treasurer, T. H. G. Michael, and General Manager and Secretary, Dr. Garnet T. Page, 18 Rideau St., Ottawa 2, Ont.

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Achema XI: The chemical apparatus and equipment congress and exhibition, will be held in Frankfurt am Main, Germany, May 14-22, 1955. Request descriptive pamphlet from Deutsche Gessellschaft fuer Chemisches Apparatewesen, Dechema (16), Frankfurt am Main-W. 13, Postfach, Germany.

Opened: By James K. Pickard, recently with the Industrial Power Branch of AEC's Reactor Development Division, a consulting practice in atomic energy developments, at 1518 K Street N.W., Washington 5, D.C.

Exhibition: Of American Scientific instruments and apparatus in the main lobby of the Department of Commerce Building, Washington, D. C., from Sept. 27-Oct. 9, 1954. Members of the Scientific Apparatus Makers Association are cooperating with the Scientific, Motion Picture and Photographic Products Division of the Department of Commerce to make this first public showing sponsored by the department possible.

The Historical Background of the Chemical Industry of New Jersey

Dr. August Merz, F.A.I.C.
333 South Harrison St., East Orange, N. J.

(Presented at the AIC Annual Meeting in Asbury Park, N. J.)

WHEN I started assembling the material on "The Historical Background of the Chemical Industry of New Jersey" I was dismayed by the discovery that there was a minimum of source material available.

New Jersey has endured calumny, outlived unpleasant notoriety, and now enjoys fame and renown. The calumny was the aspersion of not being in the Union, in spite of its being the third state to enter the Union and preceded only by Delaware and Pennsylvania, and because of a rather persistent vote for defeated presidential candidates. The notoriety was its lot because of a little mite of insect fury, the mosquito, claimed to be more ferocious in Jersey than elsewhere.

These were endured and finally cured — the calumny by a right-way vote in the first McKinley campaign; the notoriety by a judicious application of a thin film of oil on our stagnant waters. Fame and renown we have justly earned by developing a chemical industry larger than that of any other state in the Union.

Many years ago a prominent bishop told his parishioners that New Jersey had a history to be proud of, and one not to be forgotten. Let us follow the bishop's admonition.

The territory between the Hudson and Delaware Rivers and vaguely westward had been established as New Netherlands by the Dutch. In 1626 Peter Minuit paid the Indians the now famous $24.00 for the Island of Manhattan. By September 1626 Isaack de Rasiere, commercial agent for the Dutch West India Company, reported in writing to his directors that he doubted the possibility of making salt "because it sometimes rains here in the summer." He mentioned, also, the burning of oyster shells to lime and the making of brick, both oyster shells and clay being plentifully available. He added: "only we lack workmen who understand the burning and brick making."

The mercantile and trading companies exploiting new territories always had their eyes on real and also on imaginary mineral resources. In 1624 the Dutch West India Company included in its claims "all minerals newly found, or yet to be discovered, mines of gold, silver, copper, or any other metals, as well as precious stones such as diamonds, rubies

and the like, together with pearl fisheries, shall be worked and exploited exclusively by the servants of the company."

The first industrial activities concerned the necessities of life, rather than hunting for the hidden treasures of the earth. Unfortunately, we have very few detailed records of what was done in New Jersey, but there is a very interesting account compiled by Dr. C. A. Browne and included in "The Story of Chemistry in Old New York" as a part of "Our Chemical Heritage," published by the American Chemical Society for its 89th Meeting held at New York in April, 1935. This portrays the condition in Little Old New York from 1635 to 1835, and because of the nearness to New Jersey, we may assume that it tells our story almost as adequately as it does that of New York.

It is pathetic to note that the first brewer, who also distilled rum, failed for the lack of 2600 guilders to pay his just debts. It is amusing to learn that another brewer was fined 125 florins because of his refusal to permit the excise officer to inspect his brewery and was fined an additional 8 florins for contempt of court. Another brewer was fined 220 guilders for having transported to his father in Haarlem two and one-half barrels of strong beer without paying the tax. The city received 100 guilders, the sheriff 100, and the informer 20 guilders. From this we can assume that breweries were numerous and law violations plentiful.

Even in those days, they were quite advanced in matters of health and sanitation. The bread inspectorship was exercised by an influential citizen, probably more concerned with the weight of the loaf than its quality. The tanners were required to clean out the tannery pits at regular intervals because of the vile odors. Ultimately they were forced to move to the outskirts of the community. All industries were required to refrain from discharging noxious wastes into the open canals. There was a firm belief that the vile "miasmas" emanating from the decay of vegetable and animal matter were the cause of yellow fever and other pestilential ills.

The early chemical industries as well as other crafts were at that time household enterprises, rather than factory operations. It is surprising to note the almost modern aspects of the regulatory difficulties with which these enterprises were beset.

The Dutch were great navigators, explorers and exploiters, but they made one notable failure. With the exception of New Amsterdam, they established few compact settlements. On the other hand, the Swedes established numerous settlements in the southern part of the area.

The history of New Jersey as a separate colony begins when a group of London merchants convinced the government under Charles II that the time had come in the interest of

England's commercial future, to put the shackles on Holland, the nation which had come to enjoy a virtual monopoly of the carrying trade of the world.

After the British took over in 1664, there was a more rapid development of the colony. The geographic position contributed greatly to its economic development. It was a link between the northern and southern colonies. It was shielded from attacks by hostile Indians by the neighbors on the north and west. Its land was fertile and its climate propitious to agricultural operation. These and other factors resulted in a phenomenal development which placed New Jersey in first place regarding improved means of travel and transport, even prior to the Revolution.

Agriculture was a first must — the settlers had to eat to live. Other needs were met by the establishment of numerous industrial operations before the close of the 17th century. These, however, were largely individualistic. Each settler was a jack-of-all-trades, rather than a master of any.

Industrial Progress

During the 18th century, we note a checkered industrial progress. Iron was prevalent in the state and also copper, but in more limited deposits. The reduction of ores to metals introduced metallurgy which, of course, is a branch of chemistry. Today we realize the close dependence of all industry on chemistry, but at that time chemistry was associated with pills, leeches, ointments and salves. Next to agriculture, metallurgy was the most important industry of the state.

England was very jealous of her home market and the industries which supplied it. There was made every effort to strangle any development which might be competitive. This was accomplished by taxes and prohibitions. By 1750 an Act was passed by Parliament imposing stringent restrictions on the colonies as to iron production.

Meanwhile market gardening having expanded beyond the needs of the immediate communities, trade with neighboring colonies developed. There grew, also, a fair export business with the French West Indies, but this was stopped by the British Sugar Act of 1764.

The attitude of restrictions was well expressed by the First Lord of Sheffield when he said "the only use and advantage of American Colonies or West India Islands is a monopoly of their consumption and the carriage of their produce." Lord Chatham went so far as to state: "The colonies had no right to manufacture even a nail for a horseshoe." The emigration of skilled workmen for employment in Colonial industries was prohibited under penalty of fine and imprisonment. This was difficult to enforce and was sometimes quite openly violated.

Eventually came the Revolution.

There ensued a forward surge of industrial operation because of military needs. Jersey was no doubt foremost in supplying the iron sinews of war. Its copper was also a great asset. A document signed by John Hancock, president of the Continental Congress in 1775, published several methods of making saltpetre, suited to different conditions.

How the colonies managed to produce the necessities of war after having lived so long under such severe restraints is almost beyond comprehension. But necessity is the mother of invention, and they succeeded in winning their freedom.

After the war was over, came the problem of organization. There were many difficulties. One was a means to finance the government's necessary operations. This was solved by giving the central government the exclusive right to collect certain revenues. One of these was an import tax.

Early in 1790, Hamilton, Secretary of Treasury, was instructed by the House of Representatives to prepare a report on the subject of manufactures, and particularly the means of promoting such as would render the United States independent of foreign nations for military and other essential supplies. His report was submitted about two years later.

In view of our experience in 1915, this might properly be called a "Declaration of Chemical Industrial Independence." It was a most timely publication, coming at a time when industries were just emerging from the restrictions of the Colonial period to an era of free enterprise. Some argued that the new republic's interests were primarily agricultural and should remain so. Even then, the influence of foreign propaganda was exerted to make the new nation live under a false system of national economy. The doctrine taught that our national welfare depended on the free exchange of our agricultural produce for the manufactures of Great Britain. In fact, this meant the return of the status of a Colonial dependency, as an assurance of our national welfare. Hamilton was contrary-minded, while Jefferson was favorably disposed to this trend of thought.

Even fifty years later, the London *Spectator* still stressed the advantages of an economic relationship between the United States and England, equivalent to the status of colony and mother country.

Hamilton promulgated at least two great truths which should be quoted verbatim.

"The trade of a country which is both manufacturing and agricultural will be more lucrative and prosperous than that of a country which is merely agricultural. The extreme embarrassments of the United States during the late war (Revolution) from an incapacity of supplying themselves, are still a matter of keen recollection; a future war might be expected again to exemplify the mischiefs and dan-

gers of a situation, to which that incapacity is still in too great a degree applicable unless changed by timely and vigorous exertion. To effect this change as fast as shall be prudent merits all the attention and all the zeal of our public councils; it is the next great work to be accomplished."

Unfortunately this prophetic warning has not been heeded sufficiently. The War of 1812 came and we were ill prepared. World War I came and we were not at all ready. World War II came and though we were much better prepared, we should have been more forehanded. Following the Napoleonic Wars, there came a period of distress for American industry. With the cessation of hostilities, discharged soldiers returned to occupations of peace. The adoption of steam power and labor-saving devices together with an ample supply of skilled labor and a great merchant marine enabled Britain to assume command of the markets of the world.

By dumping merchandise into the United States at even below-cost prices, our industries were hamstrung. Lord Brougham, addressing Parliament in 1816, said: "It is well worth while to incur a loss upon first exportations, in order by the glut to stifle in the cradle these rising manufacturers in the United States which war has forced into existence, contrary to the natural course of things." The inference is obvious that, having regained the market by stifling competition, prices could then be set wherever the victor in the contest for the market chose to put them.

The customs laws at the time made no provision regarding the dumping of merchandise for the purpose of stifling competition. It was a sad time for American industry until Henry Clay came to the rescue by sponsoring the Tariff Act of 1824 which checked the dumping of foreign goods in our market.

Emergence

In the period 1796-1860, the ground work was laid for the emergence of modern agriculture and manufacture in New Jersey. Agriculture underwent a great transformation, outstripping the progress in industry. In industry the great development started about 1860.

About 1850 the fertilizer industry became established in the Newark area. This meant increased consumption of sulfuric acid and an expansion in the manufacture of acids. Seth Boyden had devised a process for making patent leather. He thought his product of interest for trimming harness, but gave it no thought as useful for shoes. The patent leather industry grew by leaps and bounds and by 1860 this industry in Newark alone had an investment of $6,000,000. New Jersey produced 85 per cent of all the patent leather made in the United States. Previously Boyden had devised a process for malleabilizing cast iron, making us independent of Great Britain in that respect. In 1852 an experimental

plant was built in Newark for the production of zinc oxide from ores mined in northern New Jersey. Later metallic zinc was produced and some of this was used by the U. S. Government to make the brass for its first standard set of brass weights. Paints and varnishes were another class of products requiring the aid of chemistry, even though actual chemists were a long time in obtaining recognition in their production. Paints required pigments to lend them color. Here again the chemists were gaining recognition. The oil industry built refineries in Jersey because of advantageous transport facilities. Oil refining required acids and other chemicals. This again expanded the production of acids. But for a long time the refining of oil was a rule-of-thumb process rather than one considered as chemical.

Prior to World War I, there was a meager coal tar dye industry, producing a very small part of the dye requirements of our nation. Came World War I with the cessation of imports from abroad, and there resulted a wild scramble to produce. Then the nation realized that because we lacked a sufficient dye industry our textile industry was threatened with an almost complete shutdown. The German government agents reported optimistically to their home office that unless dyes were made available to the United States textile industry, 5,000,000 men would be thrown out of work and that this might result in a revolution in the States. By great efforts, a dye industry was established and the prophesied revolution did not occur.

Congress passed remedial legislation, enacting protective tariff laws. Meanwhile, the state of war created a practical embargo which was a better protection than any tariff could have provided.

The Decades of Achievement

In pharmaceuticals and all other industries of a chemical nature, the nation became conscious of the importance of chemistry to its well-being. The oil industry initiated great research programs. The industries of plastics and resins and rubber made great strides forward in the period between World War I and World War II. When the latter came, we were far better prepared and organized. In the period 1919 to 1942, less than twenty-five years, greater progress was made than had been in any previous period of even centuries.

To establish Jersey's right to fame and renown for its development in the field of chemical industry, please take note of some statistics for New Jersey.

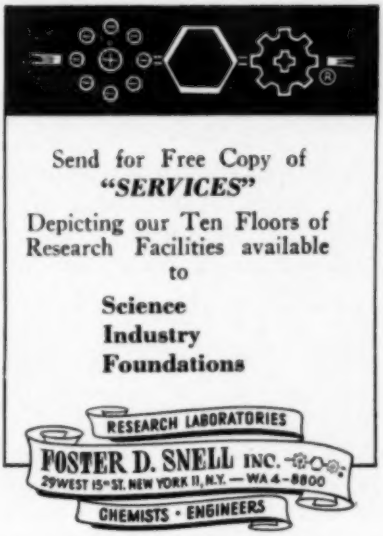
Our chemical industry employs more than 85,000 people. It pays them $400,000,000 in annual wages. It produces chemical products valued at $983,000,000 annually. It has done its share in the production of the new wonder drugs. In the past

twelve years, it has spent $9,000,000,000 on research. It has contributed vastly to our needs for military defense. It is within overnight reach of one-third of the nation's retail market. It has contributed in many ways to our health and well-being.

That is surely a record of which New Jersey may well be proud.

Honored: J. J. Alikonis, F.A.I.C., with the Stroud Jordan Award of the American Association of Candy Technologists, June 7th, at the Conrad Hilton Hotel, Chicago, Illinois. The citation read in part, "Your work in both fundamental and practical research, involving confectionery raw materials and processes which have resulted in more efficient production, improved quality and longer self life, are recognized. Your services to the Army Quartermaster, the National Confectioners' Association, the AACT and your participation in forums and symposiums dealing with confectionary matters have not been overlooked. Your ability to stimulate the members of the candy industry to think along technological lines is likewise acknowledged." Mr. Alikonis is director of research, Paul F. Beich Co., Bloomington, Ill.

Promoted: Dr. W. Andrew Wesley, F.A.I.C., formerly assistant director of the Bayonne Laboratory of International Nickel Company, who has been made director of the Laboratory.



World Symposium: On Applied Solar Energy to be held Jan. 12-15, 1955, under the leadership of Stanford Research Institute, at the Westward Ho Hotel in Phoenix, Arizona.

Inaugural Dinner: Of the Chemists' Division of United Jewish Appeal of Greater New York, held in New York, N. Y., recently to contribute a substantial sum to the 1954 UJA campaign. Dr. Kurt G. Stern, F.A.I.C., chairman of the Division presided. Dean Raymond E. Kirk, F.A.I.C., and Prof. Herman F. Mark, F.A.I.C., of the Polytechnic Institute of Brooklyn, received scrolls of honor for "their outstanding devotion to the needs of their fellow men and their adherence to the great ideals of American democracy."

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Starting Salaries: For inexperienced chemists and chemical engineers are approximately 5 per cent higher now than a year ago, reports the July 26, 1954, issue of *Chemical & Engineering News*. The median salary for chemists who received the bachelor's degree this year is $364 a month, compared to $351 in 1953. For chemical engineers, the median starting salary has risen from $360 to $375. Those completing a five-year curriculum for a bachelor's degree this year are receiving a median salary of $395, whereas the four-year graduates receive a $374 median. The highest single salaries reported were $800 a month for a Ph.D. chemist, $570 for a chemist with a master's degree, and $500 for a chemical engineer with a bachelor's degree.

The median starting salaries offered to women graduates is lower by $45 than that for the corresponding male group, in all groups except chemists with the Ph.D. degree, where there is no difference.

The median figure for chemists with the master's degree is $416 as compared with $404 last year. Those with the Ph.D. degree show an increase from $525 to $550. Starting salaries for chemical engineers with the master's degree are $425, up five per cent from last year. Chemical engineers with the doctor's degree have made the greatest gain: 6.5 per cent to a median of $575.

Elections: Of officers of the American Board of Clinical Chemistry, Inc., were held in Philadelphia, Pa., April 16-17th. The following were re-elected: Otto A. Bessey, president; A. E. Osterberg, vice-president; O. H. Gaebler, F.A.I.C., secretary-treasurer. Other members of the Board are Joseph W. E. Harrisson, F.A.I.C., C. W. Muehlberger, M. H. Power, W. A. Wolff, and W. M. Sperry, F.A.I.C. Six clinical chemists were certified, including Robert P. MacFate, F.A.I.C. The total number of certified clinical chemists is now 237. Information concerning requirements for certification is available without cost from the Secretary, Dr. O. H. Gaebler, F.A.I.C., Henry Ford Hospital, Detroit 2, Michigan.

Announced: By Robert A. Stauffer, F.A.I.C., vice president in charge of research of National Research Corp., 70 Memorial Drive, Cambridge, Mass., that Dr. A. E. van Arkel, professor of chemistry at the University of Leyden in the Netherlands, is again visiting the laboratory of the corporation where he is serving in a consulting capacity.

Dr. W. E. Kuhn to Speak at AIC Luncheon

THE New York Chapter of THE AMERICAN INSTITUTE OF CHEMISTS is enthusiastically preparing plans for the AIC luncheon to be held during the week of the American Chemical Society meeting in New York, where out-of-town AIC members who are attending the convention can meet the local AIC members in friendly fellowship.

The luncheon date is Thursday, September 16, 1954, at 12:15 p.m. (DST), at The Baroque Room of The Brass Rail, 100 Park Avenue, New York, N. Y.

The speaker at the luncheon will be Dr. Wayne E. Kuhn, F.A.I.C., who has just been appointed general manager of the newly-created Research and Technical Department of The Texas Company. He recently received a Certificate of Appreciation from the American Petroleum Institute for his guidance of its research program.

Dr. Kuhn's subject is "Professional Standards and Attitude." He has provided the following abstract of his talk to inspire some forethoughts which may be brought out in the discussion period.

Abstract

Chemistry today enjoys great prestige in the mind of the non-scientific public. This was clearly demonstrated in the volume and content of press reportage and commentary during the 1951 international conclaves. Prestige follows upon a course of behavior which accumulatively affects public thinking. Prestige may be generated simply by the articulation of goals which have the ring of high sentence. However, the public soon discovers whether or not declared objectives are a false front for poor behavior. Today, great demands are being made upon our profession. Industry needs great numbers of chemists and it demands chemistry and engineering of a highly creative order. The two major industries in the field of chemistry — chemicals and petroleum — are spending record funds on research. Therefore, the chemist is much in the eye of the business man and the general public. He has a tradition within his discipline which constitutes a framework for attitudes and behavior. Further, the AIC code specifically outlines professional objectives. It includes this phrase: "To enhance the prestige and distinction of the profession . . ." Prestige cannot be bought or legislated and no profession can pretend to it today merely because it had it yesterday. Our professional prestige can be equated as the public's faith in our actions. That faith must be earned anew each month, each year. The responsibility for the continuous renewal of public faith

should be a great stimulus, and a challenge to the profession of chemistry, for it presses upon us a continuing awareness of our scientific traditions. It demands that we never falter in behaving strictly in accordance with the highest professional standards.

John Kotrady, F.A.I.C., chairman of the New York Chapter, will preside at the luncheon. Dr. E. J. Durham, F.A.I.C., of New York University, who will serve as honorary chairman of the luncheon, will bring a message of welcome.

Luncheon tickets ($3.50) will be available at the door and at the ACS registration area, or advance registration may be made by contacting Shepherd Stigman, of Foster D. Snell, Inc., 29 West 15th St., New York, N. Y.

All AIC members are cordially welcome to come to this informal get-together.

National Chemical Exposition: To be held in the Coliseum, Chicago, Ill., Oct. 12-15, 1954, will also be a center for a series of chemical meetings and other activities. J. J. Doheny, F.A.I.C., is exposition manager.

Conference: On "Plastics in Building," scheduled for October 27-28, at the National Academy of Sciences in Washington, D. C. It is sponsored by the Society of the Plastics Industry, Inc., the Manufacturing Chemists' Association, and the Building Research Advisory Board.

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To the Editor:

Dr. Hall and his committee are to be commended for the excellence of the new contract for chemists.

The concept of a contract implies that the employee is renting his talents to the employer rather than that he is selling himself, body and/or soul.

—Dr. William I. Harber, F.A.I.C.
Chicago, Illinois

Interested?

To the Editor:

Do you think our fellow chemists who are allergic to poison ivy (like myself) would be interested in knowing that it can be cured overnight by rubbing on the juice from the stems of fresh-picked Jewel weed, sometimes called "Touch-me-not" or "Impatiens." It grows in damp shady places from Maine to Florida. Cultivated flowering Impatiens from any florist is also almost as effective.

—Merton B. Smith, F.A.I.C.
Marlton, N. J.

"Something New"

To the Editor:

The inclusion of literature announcements in condensed form, in your "Something New" department, gives me a very convenient page to file for reference information.

—Dr. John A. Steffens, F.A.I.C.
Suffern, N. Y.

Book by von Liebig

To the Secretary:

I have an old book which I believe will be of interest to some of your members . . . It is a collection of letters written by a German professor of chemistry some time prior to 1843. The title is "Familiar Letters on Chemistry and Its Relation to Commerce, Physiology, and Agriculture," by Justus von Liebig . . . It was edited by John Gardner, M.D., and was published in 1859. I shall apppreciate hearing from anyone who is interested in acquiring this book.

—Mrs. Dorothy E. Biser
200 *Pine Street*
Alexandria, Virginia

Announced: By the Emil Greiner Co., of New York, N. Y., the election of Bertram M. Stone as president. He was formerly executive vice president. Robert E. Bader was named vice president and treasurer and Dr. Roger Gilmont, Greiner's technical director, was appointed to the board of directors.

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L. T. Work, *Past President*

May Meeting

The 296th meeting of the AIC National Council was held May 12, 1954, at 6:45 p.m., at the Berkeley-Carteret Hotel, Asbury Park, N. J. President Lincoln T. Work presided.

The following officers and councilors were present: M. L. Crossley, F. A. Hessel, H. N. Holmes, H. O. Kauffmann, M. J. Kelley, D. B. Keyes, J. H. Nair, F. D. Snell, C. L. Thomas, F. E. Wall, and L. T. Work. A. W. Fisher, chairman of the New England Chapter; L. A. Hall, chairman of the Chicago Chapter; K. M. Herstein, chairman of the New York Chapter; L. N. Markwood representing the Washington Chapter; Dave Friedenreich, auditor; D. W. Young, general chairman of the Annual Meeting, and V. F. Kimball were present. J. H. Nair was appointed secretary pro tem.

President Work reported that the position of the INSTITUTE is a good deal stronger in that a solid foundation has been carefully built up during the years and we are in an excellent position to continue our activities.

The secretary's report showed that we have 2575 members. The deaths of Dr. Marston T. Bogert, Hon. AIC, on March 21, 1954, and Samuel Newmark, F.A.I.C., on March 27, 1954, were announced. A moment of silence was observed in respect to their memory.

Dr. Kauffmann reported for the Niagara Chapter that five meetings were held during the year, one on "Crystal Gazing — New Developments with a Potential Future." Although this meeting started at 6:00 p.m., it was continued until 1:00 a.m.

Mr. Herstein reported that the New York Chapter had a successful year and that John Kotrady is the new chairman.

Mr. Markwood reported that the Washington Chapter had a normal year with regular luncheon meetings.

Dr. Hall reported that the Chicago Chapter's meetings had an average attendance of 70-75 members, an average that does not include the Honor Scroll dinner to Dr. Hilton Ira Jones. The Chapter will be host to the INSTITUTE at its 1955 Annual Meeting in Chicago.

Mr. Young stated that the New Jersey Chapter had undertaken a survey on "Are Chemists Human?" The results will be presented at this Annual Meeting.

Dr. Fisher reported that the New England Chapter had sponsored the meeting at which Dr. Walter Whitman received Honorary AIC Membership, and that the Chapter's own Honor Scroll would be awarded to Prof. Avery Ashdown, May 26th.

Dr. Thomas stated that the Pennsylvania Chapter had awarded its Honor Scroll to Dr. Hugh Field.

Dr. Holmes commented that it has been said that faculty members should have advisors on how to invest their money, and this topic was discussed as a possible subject for local chapter meetings. Mr. Young recommended that the article, "Rewards for Chemists, Financial and other," by Morris T. Carpenter, in the March, 1954, issue of THE CHEMIST, be widely read.

Mr. Nair, for the Membership Committee, stated that an excellent group of new members have come into the INSTITUTE this year.

Mr. Markwood stated that membership in the INSTITUTE sometimes made it easier for chemists to get employment, especially where the person employing chemists is also a member.

Dr. Kelley produced a next-to-final draft of the Manual for Chapter Procedures. A vote of thanks was given to Dr. Kelley and his committee on the preparation of this manual.

Dr. Crossley paid a tribute to our first President, Dr. Horace G. Byers, and recalled the struggle that Dr. Byers had in the early days. "The INSTITUTE owes its existence to the zeal and energy with which Dr. Byers faced the early problems."

The following new members were elected:

FELLOWS

Esberg, Alfred M.
Self-employed. 385 East Green, Pasadena, Calif.

Neuman, Robert Knox
American Chemical Society News Service, 60 E. 42nd St., New York 17, N. Y.

Tyree, J. T.
University of Illinois, Navy Pier, Chicago 11, Ill.

Mathers, Alexander P.
Internal Revenue Service, Alcohol & Tobacco Tax Division, Washington, D. C.

Rogers, Hatton B.
Director, Technical Service, The Huron Milling Co., 9 Park Place, New York 7, N. Y.

MEMBERS

Barsky, Murray H.
Subsistence Testing Laboratory, QM Depot, Chicago, Ill.

Walker, George B., Jr.
Research Chemist, Arthur D. Little, Inc., 30 Memorial Drive, Cambridge, Mass.

RAISED TO FELLOW

Foy, George F.
Fine Chemical Division, Shulton, Inc., Clifton, N. J.

Breakfast Meeting

A breakfast meeting was held May 14, 1954, at the Berkeley-Carteret Hotel, Asbury Park, N. J., with Dr. Donald B. Keyes, the new president, presiding.

The following officers and councilors were present: M. L. Crossley, G. Egloff, F. A. Hessel, K. M. Herstein, H. O. Kauffman, D. B. Keyes, M. J. Kelley, J. H. Nair, E. Ott, R. S. Robinson, M. Sittenfield, W. J. Sparks, and L. T. Work. A. W. Fisher, chairman of the New England Chapter; S. D. Kirkpatrick, chairman of the Committee on Honorary Membership; Frank B. Havens, representing the Western Chapter; and V. F. Kimball were present.

Upon motion, a Finance Committee was appointed, to consist of Mr. Nair, Dr. Hessel, Dr. Work, and President Keyes.

Upon motion, Dr. Horace G. Byers, first president and a member of the organizing committee of the INSTITUTE, was elected to Honorary Membership and the

chairman of the Honorary Membership Committee was requested to make this announcement at the Honor Recipients Luncheon to be held May 14th.

AIC Activities

C. P. Neidig, F.A.I.C.

New York Chapter

Chairman, John Kotrady
Vice Chairman, Jack Dollinger
Secretary-Treasurer, Richard L. Moore
Foster D. Snell, Inc.
29 West 15th St., New York, N. Y.
Representative to National Council:
Karl M. Herstein

The New York Chapter is actively planning the AIC Luncheon to be held September 16th, during the week of the American Chemical Society meeting in New York. As many members as possible will be present at the luncheon to welcome visiting AIC members. (See page 335.)

Niagara Chapter

Chairman, Dr. Theodore E. Gilbert
Vice Chairman, Warren B. Blumenthal
Secretary-Treasurer, Lyle J. Mahar
Coke Oven Laboratory
Bethlehem Steel Co.,
Lackawanna, New York
Representative to National Council,
Lester F. Hoyt

The above officers were elected at the annual meeting of the Chapter. Mr. Hoyt is convalescing from a recent illness. Dr. H. O. Kauffmann, previous representative to the National Council, will serve in his place until Mr. Hoyt is able to take over his duties as council representative.

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Opportunities

Doris Eager, M.A.I.C.

AIC members who are seeking positions may place notices in this column without charge.

Positions Available

Chemist. Young with analytical experience. Box 81, THE CHEMIST.

Chemist. Physical and/or organic, B.S. to Ph.D. for research positions. Salary $325 to $550. Apply to Bjorksten Research Laboratories, 323 West Gorham St., Madison 3, Wisconsin.

Research Director. Experienced. 35 to 43 years of age. Ph.D. Superior qualifications. Salary high. Box 83, THE CHEMIST.

Plastics Chemist. Experienced in extrusion of polyethylene film or tubing. Good position. Box 85, THE CHEMIST.

Chemists Available

Organic Chemist. F.A.I.C., Ph.D. 1945. Diversified experience, including supervisory, in synthesis and process development from laboratory through full-scale production. Special training and experience in correlating chemical structure with biological activity. Well-versed in product development and formulation work. Publications. Age 34, family. Desire challenging opportunity with good growth potential. Location immaterial. Box 80, THE CHEMIST.

Russian translator. Experienced chemical engineer and chemist. Box 82, THE CHEMIST.

Supervisory Chemist: M.S., 7 years broad experience in surfactants, agricultural chemicals, fatty derivatives. Seeks position offering increased responsibilities, technical service, liaison, sales. Administrative and supervisory experience. Age 33, family, Box 84, THE CHEMIST.

Development Director or Chief Chemist: B.S., chem. eng., F.A.I.C. 30 years exp. refining petroleum products: process control, organic research, development. Available for mfg., product development, research, and applications in lubricants and asphalts; also white oils, synthetic detergents, polymer manufacture. Creative, good organizer. Top references. Salary moderate. Box 86, THE CHEMIST.

Plastics Chemist: Ten years diversified experience in plastics applications, including polyester castings and laminates, epoxies, cast cellulosic films, resin adhesives, foamed resins. B.S. Univ. of Texas, 1944. Box 88, THE CHEMIST.

For Your Library

Organic Coating Technology

Vol. I. Oils, Resins, Varnishes & Polymers, by Henry Fleming Payne, F.A.I.C. John Wiley & Sons, Inc. 674 *pp.* $10.00.

The author has covered in a most readable manner both the fundamentals of film formation and the various types of synthetic resins used in the coating field, such as the alkyds, ureas, vinyls, epons, silicones, phenolics. Both accurate and practical, it is the best book on the general subject that this reviewer has read, and in his opinion is a must not only for all those in the field, but also for any organic chemist interested in synthetic resins or polymers.

—DR. F. A. HESSEL, F.A.I.C.

Organic Chemistry, Volume III

Edited by Henry Gilman. John Wiley & Sons, Inc. 1953. 607 *pp.* 6" x 9". $8.75.

Dr. Gilman, editor-in-chief of a distinguished board of seven well-known chemists, presents the third of a proposed four volume project, called a treatise on organic chemistry.

In this, as in the first two volumes, each chapter has been prepared by a specialist. Necessarily, the scope of the book is broad, ranging from a detailed study of organic reaction mechanisms by Dr. Paul Bartlett of Harvard to a fact-crammed discussion of antibiotics by Lee Cheney of Bristol Laboratories. Intervening chapters consider the application of infrared and ultraviolet spectra to organic chemistry (Miller), Lipids (Cowan and Carter), Organic Dyes (Grimmel) and Chemotherapy (Ing). Each chapter has abundant citations to chemical literature, a valuable feature for research workers.

Dr. Gilman in his preface has promised revisions and additions as dictated by progress in the various phases of organic chemistry. That is ample assurance that this volume and the other three will become a classic source of reference and study. Certainly, any chemical library will be incomplete without it.

—H. B. WYCKOFF

Labelled Atoms

By Raymond Glascock. Interscience Publishers, Inc. 225 *pp.* 5" x 7½". $1.25.

This is a clearly written exposition of the use of isotopes in biological research, introductory in character.

Radioactive Isotopes

By Whitehouse & Putnam. Oxford University Press. 424 *pp.* 6½" x 9½". $10.00.

This fine book contains a detailed exposition of the production, application, and manipulation of radioactive isotopes, with a minimum of mathematics.

The Nature of Virus Multiplication

P. Fildes & W. E. Van Heyningen, Editors. Cambridge University Press. 320 *pp.* 6½" x 10". $6.50.

This is a truly remarkable account of the Second Symposium of the Society of General Microbiology held at Oxford University, April 1952. Eight months prior to the event the society invited a representative group of virus specialists to prepare an account of their opinions concerning virus multiplication. The reports were put in type and galley proofs distributed to the members three weeks before the symposium. The meeting was attended by 400 persons. The galley proofs were assumed to have been read and the papers were declared open to discussion by the invited speakers and the audience. Each speaker was supplied with a printed form on which the questions or answers

were to be recorded and submitted for publication. Thus each of the sixteen different papers contains a discussion with questions and answers in addition to the necessary bibliography.

—Dr. Henry Tauber, F.A.I.C.

Modern Radiochemical Practice

By Cook & Duncan. Oxford University Press. 467 *pp.* 6½" *x* 9½". $8.50.

The details of the measurement of nuclear radiation are given in excellent exposition with practical suggestions on manipulation and experiments in physical and chemical methods.

—Dr. John A. Steffens, F.A.I.C.

Chemical Books Abroad

Rudolph Seiden, F.A.I.C.

Verlag Chemie, Weinheim Bergstr: *Polyvinylpyrrolidon,* by Walter Reppe; 1954, 72 pp., paper covers DM 9.80.—History of PVP, synthesis, properties, assay methods, and uses in textile and paint industries, cosmetics, and medicine are outlined by Prof. Reppe who synthesized it in 1939. There are 283 literature and patent references. • *Deutsche Einheitsverfahren zur Wasseruntersuchung,* by L. W. Haase; 1954, 180 pp., DM 12.40—This volume contains all physical, chemical, and bacteriological methods recognized as most dependable (by the organization of the German water chemists) for making water, sewage, and silt determinations. • *Moderne Galvanotechnik,* by Willy Machu; 1954, 570 pp. (194 ill., 81 tables), DM 35.80—The great progress made in the field of galvanotechnics since 1940, particularly in the U.S.A., is depicted in this volume for the benefit of German scientists and industrialists. Among the many chapters of the book—in addition to the theoretical part—are those giving expert advice on producing Ni, Cr, Cu, Zn, Cd, Sn, Pb, Fe, Mn, In, Co, Sb, As, Ag, Au, Rh, Pt, Pd, and alloy coatings. • *Entstehung und Ausbreitung der Alchemie, Vol.* 3, by E. O. von Lippmann; 1954, 166 pp., paper covers, DM 14.—This supplement to the out-of-print volumes 1 and 2 of this treatise on the beginning of chemistry includes a great variety of articles, and notes, from Abd al-Latif to Zosimos.

Akademie-Verlag, Berlin: *Physikalische Chemie der Kolloide,* by S. M. Lipatow. 1953, 333 pp. (103 ill.), DM 22.—This textbook, translated from the Russian, proves that science and technic, at least as far as colloid chemistry is concerned, are much farther advanced in Soviet Russia than most Americans believe. Its author uses chiefly methods of mathematical analysis to explain the physical-chemical fundamentals and theories of the colloids and he gives much space to his outstanding presentation of lyophilic and gelatinous masses.

Williams & Wilkins Co., Baltimore (Morrison & Gibb, London): *Black's Veterinary Dictionary,* by Wm. C. Miller and G. P. West; 3rd ed., 1112 pp. (392 ill.), $9.—An encyclopedia (rather than a dictionary) of the diseases of the domesticated animals and methods of treatment. Drugs, used for the control of these diseases, including some antibiotics and sulfa drugs, are also mentioned. This reference work, written in simple language, covers hundreds of terms—from Abattoir to Zygote.

Will You Come

Sept. 16, 1954. AIC Luncheon during ACS meeting in New York. 12:15 o'clock. The Baroque Room, The Brass Rail, 100 Park Ave., New York 20, N. Y. Chairman, John Kotrady. Speakers: Dr. E. J. Durham, Honorary Chairman, "A Message of Welcome." Dr. W. E. Kuhn, The Texas Company, "Professional Standards and Attitude." For reservations ($3.50) write: Shepherd Stigman, Foster D. Snell, Inc., 29 West 15th St., New York, N. Y.

Sept. 16, 1954. Meeting of the AIC National Council and Board of Directors. The Chemists' Club, 52 East 41st St., New York, N. Y. Dinner: 6 p.m.

Jan. 20, 1955. New York Chapter. Presentation of Honorary AIC Membership to Dr. Milton C. Whitaker, F.A.I.C.

May 12, 13, 14, 1955. AIC Annual Meeting. LaSalle Hotel, Chicago 2, Ill.

May, 1956. AIC Annual Meeting. Tentatively scheduled for Washington, D.C.

Something New

"Analysis of Hydrogen Peroxide Solutions," Bull. 59. "New Vinyl Plasticizers," Bull. No. 56. Buffalo Electro-Chemical Co., Inc., Sta. B., Buffalo 7, N. Y.

"Delayed Action Accelerators." Rubber Chemicals Tech. Bull. 836. American Cyanamid Co., Intermediate & Rubber Chemicals Dept., Bound Brook, N. J.

"Sperm Oil Products." Tech. Bull. No. 904A. Archer-Daniels-Midland Co., 2191 W. 110th St., Cleveland, Ohio.

"Cachalot Fatty Alcohol Data Sheet." M. Michel & Co., Inc., 90 Broad St., New York 4, N. Y.

"Emery Modified Fatty Acids." Tech. Bull. 50. Emery Industries, Inc., 2504 Carew Tower, Cincinnati 2, Ohio.

"N. Propyl Alcohol." Data. Chemical Div., Celanese Corp. of America, 180 Madison Ave., New York 16, N. Y.

"Vinyl Adhesives." Information. National Starch Products, 270 Madison Ave., New York 16, N. Y.

"New Wetting, Dispersing, & Anti-Settling Agent for Protective Coatings." Brochure. Nuodex Products Co., Inc., Elizabeth, N. J.

"Hot Lacquer Process." 20-minute color-and-sound movie. Information. Cellulose Products Dept., Hercules Powder Co., Wilmington, Del.

"Titanium Seamless Tubing." Bull. 42. Superior Tube Co., 1621 Germantown Ave., Norristown, Pa.

"Aluminum Chemicals." Brochure. Reynolds Chemicals, 2500 So. Third St., Louisville, Kentucky.

"Flash Points & Ignition Temps. of Hazardous Substances," Buil. 2655; "Explosive Gases & Dusts", Bull. 2660. "Explosion Proof Fixtures." For information: Crouse-Hinds Co., 7th North Street. Syracuse, N. Y.

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"Model 13 Ratio-Recording Spectrophotometer." Bulletin. The Perkin-Elmer Corporation, Norwalk, Conn.

"Standards in a Changing World." 80-page booklet. $3.00. American Standards Association, 70 E. 45th St., New York 17, N. Y.

"New Titrimeter." Information. Fisher Scientific Co., 717 Forbes St., Pittsburgh 19, Pa.

"Dust Absorber." Information. Parlee Co., Inc., 829 Ft. Wayne Ave., Indianapolis 2, Ind.

"Paint Bonding and Rust Resistance." Phosbond 61. Pennsylvania Salt Mfg. Co., 100 Widener Bldg., Philadelphia 7, Pa.

"Lignin. Polyfons." Sulfonated lignins, surface active. Technical Bul. No. 301. West Virginia Pulp & & Paper Co., Polychemicals Div., Charleston, South Carolina.

"Lignin. Calcium Lignosulfate." Information. Lake States Yeast Corp., Rhinelander, Wis.

"Bibliography of Photoelectric Spectrophotometric Methods of Analysis for Inorganic Ions." Special Technical Publication No. 125. $1.25. American Society for Testing Materials, 1916 Race St., Philadelphia 3, Pa.

"Morpholine — Multiple industrial applications." Bulletin. Jefferson Chemical Co., 260 Madison Ave., New York 16, N.Y.

"New Vinyl Resin — Pliovic DB80V." Goodyear Tire & Rubber Co., Akron, Ohio.

Report on Scientific Manpower

THE following letter has been directed to Maj. Gen. Lewis B. Hershey, director, Selective Service System, Washington 25, D. C.:

The American Institute of Chemists, an organization devoted exclusively to the professional aspects of chemists and chemical engineers, has been giving careful study over the past few years to the scientific and engineering manpower problem. Our Board and Council view with great concern the increasing tendency of "Selective Service" to ignore selectivity, with the result that there is a marked decline in occupational deferments in the industries essential to defense.

Scientists and engineers occupying key positions in industry and civilian life who, regardless of age, can contribute more to the national health, welfare and security of the country in those positions — as determined by a competent national review board — should be kept there as long as they continue to occupy such positions. "Selective Service" took this stand in the Summer of 1944, and will undoubtedly take it again in World War III, but there will be a severe penalty for lateness. France with universal military service at the start of World War II found it impossible, because of public opinion, to recover competent men from the armed services, no matter how badly they were needed for civilian purposes.

It is our belief that, in Public Law 51, Congress clearly indicated its desire to give "Selective Service" *the power of selection*. The selectivity so authorized is not something to be interpreted out of existence by any governmental agency.

We have been repeatedly told that in the next war — if and when it comes — survival will be the main question. We will be fighting an enemy whose sole objective will be victory, without regard for international law or any religious or ethical considerations. This war will not be fought by "Marquis of Queensbury Rules." We have never in the past been adequately prepared for a World War, but we must be this time.

It is well to glorify the young man who uses a weapon and wears a uniform, but he must be provided with the most effective weapons and the best protective devices. The young man who helps design and create the new weapon but who does not necessarily wear a uniform should not be ignored. Wars have never been won solely by the man who carries the gun.

Preparedness in our defense industries is fully as important as preparedness in our armed forces. As has been said so well by Howard A. Meyerhoff: "Modern arms call for as much scientific and engineering skill in their design and manufacture as military skill in their use."

It is our belief that the Department of Defense has done an excellent job in planning the military manpower program for the future. On the other hand, we see no evidence of similar consideration and planning on a scientific and engineering manpower program, to make certain that our defense industries will be able adequately to meet the next emergency. No group of industries could properly do this. There is need for a Government agency analogous in function with the Department of Defense, to do the same kind of job for civilian scientists that has been done for the armed services. Without such an agency with the authority to put the plan into effect, there will be a vacuum with respect to the scientists available for industry, and the consequences may be serious indeed.

—LLOYD VAN DOREN, *Secretary*

Exhibition: Of Handicrafts, Industry and Agriculture, to be held at Rovereto, (Trento), Italy, Aug. 21-Sept. 6, 1954.

Condensates

Ed. F. Degering, F.A.I.C.

We seem to be realizing that the independence which comes with exercising our privileges is vastly more satisfying than the feeling of dependent security.

—Gordon Monfort

Powdered magnesium-fueled engines, according to Joseph H. Scharen of Reade Manufactures, may step in when petroleum is exhausted. Three pounds of powdered magnesium can produce horsepower equivalent to that of thirty gallons of aviation gasoline.

The foaming that accompanies many industrial operations in which liquids or semi-solids are vat-heated or distilled can now be controlled safely and effectively by Antifoam A Spray, a Freon-aerosol silicone de-foaming agent.

During the past 20 years, world population has increased 25 per cent and world food production has inched up a scant 5 per cent, whereas in the United States the comparable figures are 18 per cent and 50 per cent.

The difference between getting and wishing is the work we do.

—Will Rogers

Over 100 radioactive isotopes and 175 non-radioactive isotopes are available from the Oak Ridge National Laboratory, Oak Ridge, Tenn.

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—Dr. Walter J. Murphy, F.A.I.C.

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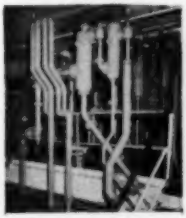

This illustration shows two 4-stage EVACTOR units in the plant of a leading manufacturer of vitamins and other pharmaceuticals. The same plant uses numerous other C-R EVACTOR units of different types—as do the majority of manufacturers in this important field—for many different processes, including deodorizing, distilling, drying, refrigeration, etc. They are as simple as the valves that turn them on, yet maintain absolute pressures down to a small fraction of 1 m.m. absolute where steady, dependable vacuum is extremely important.

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